6. PORTAL MANAGEMENT

A. HOSTING

It is reasonable to expect that the first instance of InsideNASA may be implemented and managed at a NASA center. This will allow the responsible internal integrators, developers and content providers a friendly environment supported by existing infrastructure organizations with which they already have close working relationships. . Once the general confidence factor is high enough (through testing, use and rapid feedback) to recommend a solid baseline and the detailed process flow for content creation and delivery are well understood and integrated into existing NASA processes, the system could be promoted into a commercial managed hosting environment. This will allow us to focus on core competences and mission-critical processes rather than dedicating personnel, resources and activities to web hosting of NASA Portals.

The growing importance of e-business and the increased demand for public web access to NASA's electronic content has made an Internet presence a necessity for NASA. Naturally, a credible, effective web presence that inspires the general public and informs our employees, customers and partners requires a thoughtful hosting decision. NASA is understand/ably concerned with the effectiveness and functionality of our sites, as well as security, privacy and return on investment. Like the first instance of Inside NASA, the first instance of My NASA will be internally hosted.

B. VENDOR MANAGEMENT AND UPGRADE PATH

The fullest participation of the vendor in the development and deployment will lead to an increased, value-added support level. This means that the vendor should be engaged at all critical levels, including product management, technical development and product support. Measurable, bilateral benefits can be achieved from the onset. Future planning will be best achieved through periodic exchange under a mutual non-disclosure agreement (NDA).

Once a decision his made to externally host the NASA Portals, there must be a willingness to work collaboratively and synergistically with our outside vendors. Full participation of the vendor in the development and deployment will increase value-added support. The vendor must be engaged at all critical activities, including product management, technical development and product support. Measurable, bilateral benefits can be achieved from

the onset. Future planning will be best achieved through periodic exchange under a mutual non-disclosure agreement (NDA).

The commercial portal environment is not stable but this risk is well known and can be managed through a periodic technology survey. The results need to be propagated to the entire organization. No one method or "industry guru" can be relied upon to give sufficient results in this area. If the current vendor shows signs of "slipping" then this risk needs to be clearly identified and tracked.

Enterprise Information Portals will continue to grow rapidly in functionality. NASA is just beginning to understand what is possible by combining universal communication, business intelligence and workflow management. We must periodically gauge the portal marketplace and assess any potential risk of the current solution with new solutions being offered.

C. VENDOR CAPABILITY DEMONSTRATIONS

Hosting vendor capability demonstrations using a subset of NASA-specific content provides both parties with valuable insight. It should not be done in a way that "exercises" any vendor or misleads them. Feedback should be prompt and fair. This is a reasonable bi-annual activity.

Once a year, a (very) limited development license for the newest portal technology leader should be acquired and rapidly prototyped using applicable content. A succinct recommendation needs to be given to the responsible development organization and funding organization.

D. TECHNICAL TRAINING FOR PORTAL STAFF AT CENTERS

Developers responsible for programming data channels and the general presentation layer will be highly leveraged if they attend the vendor's training classes. This will not obviate the need for an on-site engagement with the vendor's professional services consultant.

Administrators responsible for the portal configuration, channel presentation and sub-portal control will benefit from vendor training classes. Coordinated distributed management will be required, given the size of the job.

The development organization, along with the organizations providing the authentication service, search services and eventually content management services, are responsible for producing and maintaining the Help Desk curriculum.

Table 1. Examples of skills needed for web site versus portal developers

	WEB SITE	PORTAL
HTML	✓	✓
WEB SITE DESIGN (INCLUDING HUMAN FACTORS)	✓	✓
CONTENT MANAGEMENT	✓	✓
SEARCH ENGINES		✓
DATABASE SKILLS (RELATIONAL OR OBJECT-ORIENTED)		✓
PORTAL TECHNOLOGIES (INCLUDING INTELLIGENT AGENTS)		✓
PROJECT MANAGEMENT AND VENDOR RELATIONSHIPS		✓

E. SERVICE LEVEL AGREEMENTS FOR INTERNAL SERVICE AND VENDORS

One of the most important and often overlooked items in working with any outsourced operation is a solid service level agreement (SLA). An SLA is the contract between the managed hosting provider and the company buying the service. It should detail who does what, what is expected and assumed, and what type of services (quantity and quality) are expected to pass between the two parties.

The ***hardware*** and ***software*** issues focus on:

- Separation of the development and operations platforms
- Separation of the data and the application
- Help desk support for technical issues, with a shared knowledge base of problem resolutions
- Security
- Configuration management for software builds and for regression testing purposes
- Regular replenishment of hardware and upgrades to software

1. Administration

Administration of the portal should not a full-time job. However, an administrator needs to be available during times of critical changes in the data channels, sub-portal changes or for emergency changes. An SLA would specify the following

- Administrator accessibility during normal business hours through the four time zones

- Integrated into an institutional problem reporting system, such as Remedy
- Tight integrated into the hosting service

2. Help Desk

The Help Desk SLA should be written to reflect a complete and integrated service provider. SLA items should include (in no particular order)

- Staffing during normal business hours through the four time zones.
- Integrated into the institutional problem reporting system, such as Remedy
- Tight integrated into the hosting service
- Single point of contact for users seeking help

3. Hosting

The Hosting SLA should be written to reflect a complete service provider. SLA items should include (in no particular order)

- Availability (nominal, MTBF, MTTR)
- Performance
- Capacity
- Capacity upon demand
- Security (physical, system and network)
- Metrics reporting
- System administration
- System monitoring
- Backup/restore
- Configuration management
- License management
- Fail-over
- Load balancing
- Operating system upgrades
- Application software upgrades
- Hardware
- Upgrades

F. SYSTEM ANALYSIS AND TESTING

System testing is differentiated from usability testing or design in that this testing ensures that the portal behaves as it is designed, but does not necessarily contribute to the design. Testing needs to be carried out in order to assure performance and proper management of the content. A thorough testing plan needs to be developed based on the applications chosen and the expected uses to which they will be put. Developers need to be involved in: (1) working with a test engineer to develop the types of tests, and (2) setting up the processes by which the test data will be analyzed and acted upon. For example, NASA will need to determine if there are certain expectations for the portal (such as it needs to handle 1,000,000 transactions per hour during peak mission encounters) and when problems occur a specific, named individual is available to help (such as a developer or ASP employee to be paged when there is a hardware or software failure).

Some of the types of testing include web traffic analysis, regression, load and stress, and performance test and monitoring. Some of the testing requirements are noted in the Appendix.

These tools, such as WebTrends, Astra Site Manager, and WebAlizer can be used throughout the development and operational life cycle. They can help the developers determine how the portal is being used: how many times people visit a specific page ("hits"), the length of time spent on each page, what pages or images people are downloading, and how people are navigating through the portal. Such analysis is important so that the portal and channels can be made as efficient and useful as possible. By noting which browsers customers are using, we can optimize the portal for Netscape Navigator, Internet Explorer, or others based upon actual customer usage. These tools also keep track of the search strings customers use so that we can tweak our taxonomies and help guide customers to their product choices as quickly as possible. These tools will be used periodically to check all intranet web sites. Broken links and download times that exceed a specific threshold will be reported to the site developers so that appropriate fixes can be made.

These products can also yield information that is useful for the developers to keep the portal running clean and smooth. Annoying errors, such as "404 Page or File Not Found" or "403 Forbidden Access", broken links, and out-of-date referring pages can be dealt with before the customers see them. Developers can monitor the number of visitors to predict if performance

threshold are close. Some of the security monitoring includes the ability to detect unauthorized access attempts and deny or allow visiting search engine spiders.

Once the applications are moved into the integration and testing environment either in-house at Palmers or at the ASP, two tests will be required: a basic regression test and performance testing that will include scripts to verify terminal and disk activity, load imbalances between the processors, the number of operations per second, CPU/disk/memory usage, and system process performance (protocol). Cron jobs will be set up to run these scripts on a regular basis, with the appropriate development staff members being notified if a problem occurs or a threshold is being approached.

G. MAINTENANCE AND SUSTAINING OPERATIONS

There will be regular instances of broken links and abused interface agreements. In order to maintain usability and credibility, this bit rot needs to be fixed on a daily basis. It needs to be a FTE that works well with the evolving content management system. The user has expectations of what will happen as they navigate through NASA's web space. Understand the behavior of the user—monitoring the number of minutes visitors stay at a site and the number of times they return, cleaning up dead and broken links, and keeping download times to a minimum.

Bugs reported through the Help desk or the integrated problem reporting system need to be evaluated and prioritized for repair, testing and release through the CM system.

Within a development cycle, the development team needs to refresh the presentation capabilities of the most visible data channels. This is not to be confused with the content management system.

Using the channel usage metrics, data channels need to be evaluated for ROI. Heavily used channels need the most attention and deserve investment capital for maintenance and improvement. Underutilized or significantly poor performing channels should be deleted and replaced by ones requested by user survey.